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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/065,919	11/29/2002	Jui-Neng Tu	9817-US-PA	5320

31561 7590 10/28/2003

JIANQ CHYUN INTELLECTUAL PROPERTY OFFICE
7 FLOOR-1, NO. 100
ROOSEVELT ROAD, SECTION 2
TAIPEI, 100
TAIWAN

EXAMINER	
DANG, PHUC T	

ART UNIT	PAPER NUMBER
2818	

DATE MAILED: 10/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/065,919	TU ET AL.	
	Examiner	Art Unit	
	PHUC T DANG	2818	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,9,10,12,15-18 and 20* is/are rejected.

7)☒ Claim(s) *5,7,8,11,13,14 and 19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Oath/Declaration

1. The oath/declaration filed on November 29, 2002 is acceptable.

Specification

2. The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 15-17 are rejected under 35 U.S.C. 102 (e) as being anticipated by Shen et al. (U.S. Patent No. 6,486,067 B1).

Shen discloses a re-oxidation process of a semiconductor device, comprising:

providing a substrate (10, Fig. 5A) having a stacked structure (Fig. 5A) thereon, where the stacked structure includes polysilicon/metal silicide interface (20, Fig. 5A);

forming a CVD oxide layer (21, Fig. 5B) on the substrate and the stacked structure with a chemical vapor deposition (CVD) process; and

performing an oxidation process to form a thermal oxide layer on the substrate and the stacked structure [col. 3, lines 8-30].

Regarding claims 16-17, Shen discloses the stacked structure includes a stacked gate that comprises, from bottom to top, a tunneling layer, a polysilicon floating gate, an inter-poly dielectric layer, a polysilicon control gate and a metal silicide layer [col. 3, lines 8-30].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-3, 6, 9, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. (U.S. Patent No. 6,515,328 B1) in view of So (U.S. Patent No. 6,136,666).

Regarding claims 1 and 9, Yang discloses a re-oxidation process of a semiconductor device, comprising:

providing a substrate (12, Fig. 5) having a stacked structure (Fig. 5A) thereon, where the stacked structure includes polysilicon/tungsten silicide interface which includes a tunneling layer

(15, Fig. 2), first polysilicon layer (16, Fig. 2), an inter-poly dielectric layer (24, Fig. 2), a second polysilicon layer (26, Fig. 2) and a tungsten silicide layer (28, Fig. 2) on a substrate (col. 1, lines 44-48);

forming a CVD oxide layer (68, Fig. 5) on the substrate and the stacked structure with a chemical vapor deposition (CVD) process [col. 5, lines 12-15].

Yang discloses all the features of the claimed invention as discussed above, but does not disclose a step of performing an oxidation process to form a thermal oxide layer on the substrate and the stacked structure.

So, however, discloses a step of performing an oxidation process to form a thermal oxide layer on the substrate and the stacked structure [col. 1, lines 53+].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to apply the teaching of So to Shen discussed above such that a step of performing an oxidation process to form a thermal oxide layer on the substrate and the stacked structure for a purpose of improving the gate structure in the process.

Regarding claims 2-3, Yang discloses the stscked structure includes a stacked gate that comprises, from bottom to top, a polysilicon floating gate, an inter-poly dielectric layer, a polysilicon control gate and a tungsten silicide layer [col. 2, lines 44-52].

Regarding claims 6 and 12, So discloses the CVD oxide layer has a thickness from 30 Angstroms to 120 Angstroms [col. 2, lines 53-55].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to apply the teaching of So to Yang discussed above such that the CVD

oxide layer has a thickness from 30 Angstroms to 120 Angstroms for a purpose of improving the gate structure in the process.

5. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. in view of Lee et al. (U.S. Patent No. 6,124,153).

Yang discloses all the features of the claimed invention as discussed above, but does not disclose the CVD process is a low pressure chemical vapor deposition (LPCVD) process or a plasma enhanced chemical vapor deposition (PECVD) process.

Lee, however, discloses the CVD process is a low pressure chemical vapor deposition (LPCVD) process or a plasma enhanced chemical vapor deposition (PECVD) process [col. 3, lines 45-54].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to apply the teaching of Lee to Shen discussed above such that the CVD process is a low pressure chemical vapor deposition (LPCVD) process or a plasma enhanced chemical vapor deposition (PECVD) process for a purpose of improving the gate structure in the process.

6. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yang et al. and So in view of Lee et al. (U.S. Patent No. 6,124,153).

Yang and So disclose all the features of the claimed invention as discussed above, but does not disclose the CVD process is a low pressure chemical vapor deposition (LPCVD) process or a plasma enhanced chemical vapor deposition (PECVD) process.

Lee, however, discloses the CVD process is a low pressure chemical vapor deposition (LPCVD) process or a plasma enhanced chemical vapor deposition (PECVD) process [col. 3, lines 45-54].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to apply the teaching of Lee to Shen and So discussed above such that the CVD process is a low pressure chemical vapor deposition (LPCVD) process or a plasma enhanced chemical vapor deposition (PECVD) process for a purpose of improving the gate structure in the process.

7. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shen et al. in view of So (U.S. Patent No. 6,136,666).

Shen discloses all the features of the claimed invention as discussed above, but does not disclose the CVD oxide layer has a thickness from 30 Angstroms to 120 Angstroms.

So, however, discloses the CVD oxide layer has a thickness from 30 Angstroms to 120 Angstroms [col. 2, lines 53-55].

It would have been obvious to one having ordinary skilled in the art at the time the invention was made to apply the teaching of So to Shen discussed above such that the CVD oxide layer has a thickness from 30 Angstroms to 120 Angstroms for a purpose of improving the gate structure in the process.

Allowable Subject Matter

8. Claims 5, 7-8, 11, 13-14 and 19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuc T. Dang whose telephone number is 703-305-1080. The examiner can normally be reached on 8:00 am-5:00 pm.

10. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on 703-308-4910. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-5841 for After Final communications.

11. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Phuc T. Dang PD

Primary Examiner

Art Unit 2818

October 22, 2003